Applied A.I. Solutions

Data Visualization Techniques

Professor

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DATA VISUALIZATION TECHNIQUES

Business Intelligence tools

Tableau Desktop Pro

DATA VISUALIZATION TOOLS: TABLEAU

1

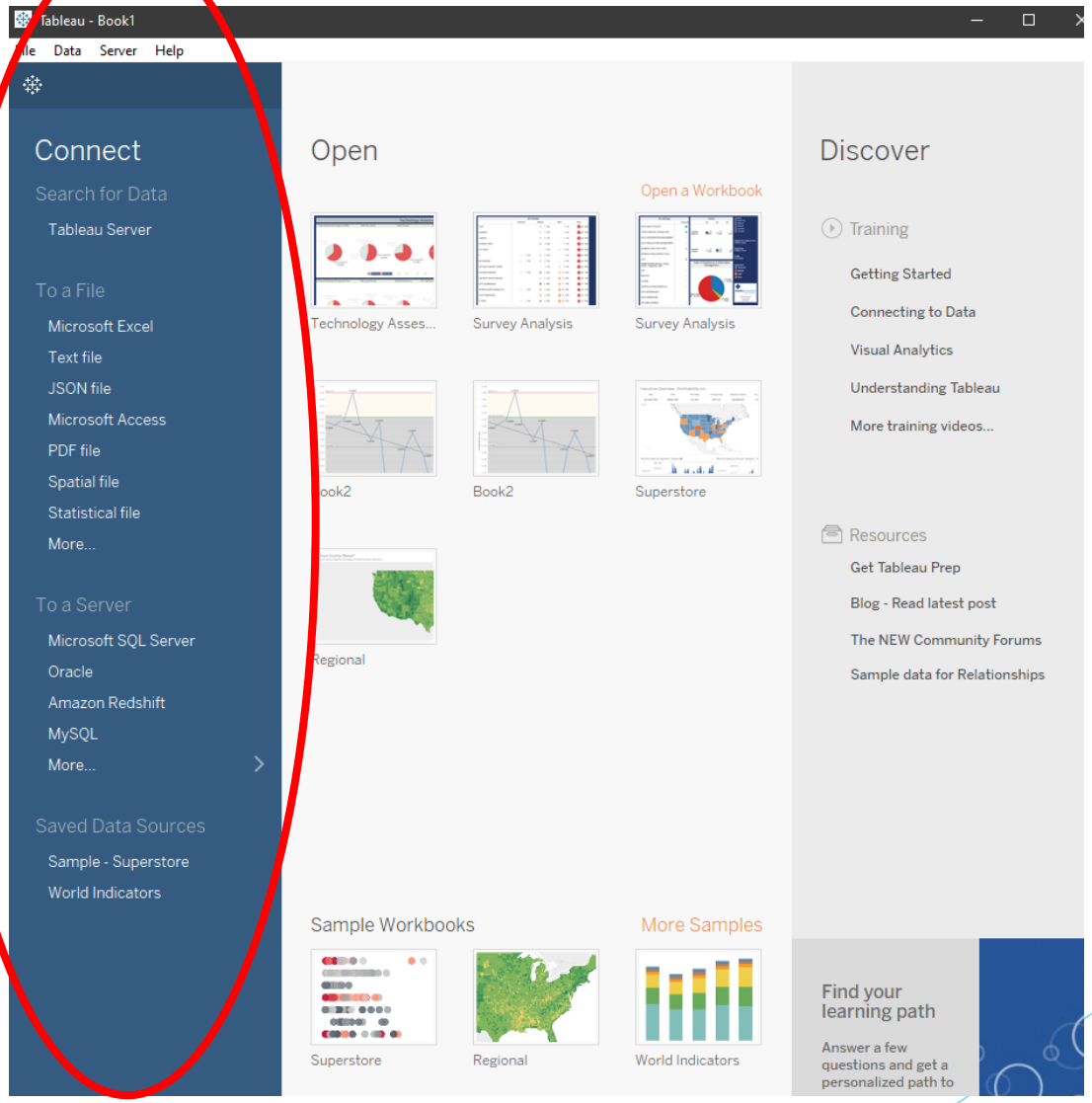


TABLEAU: Worksheet and Canvas

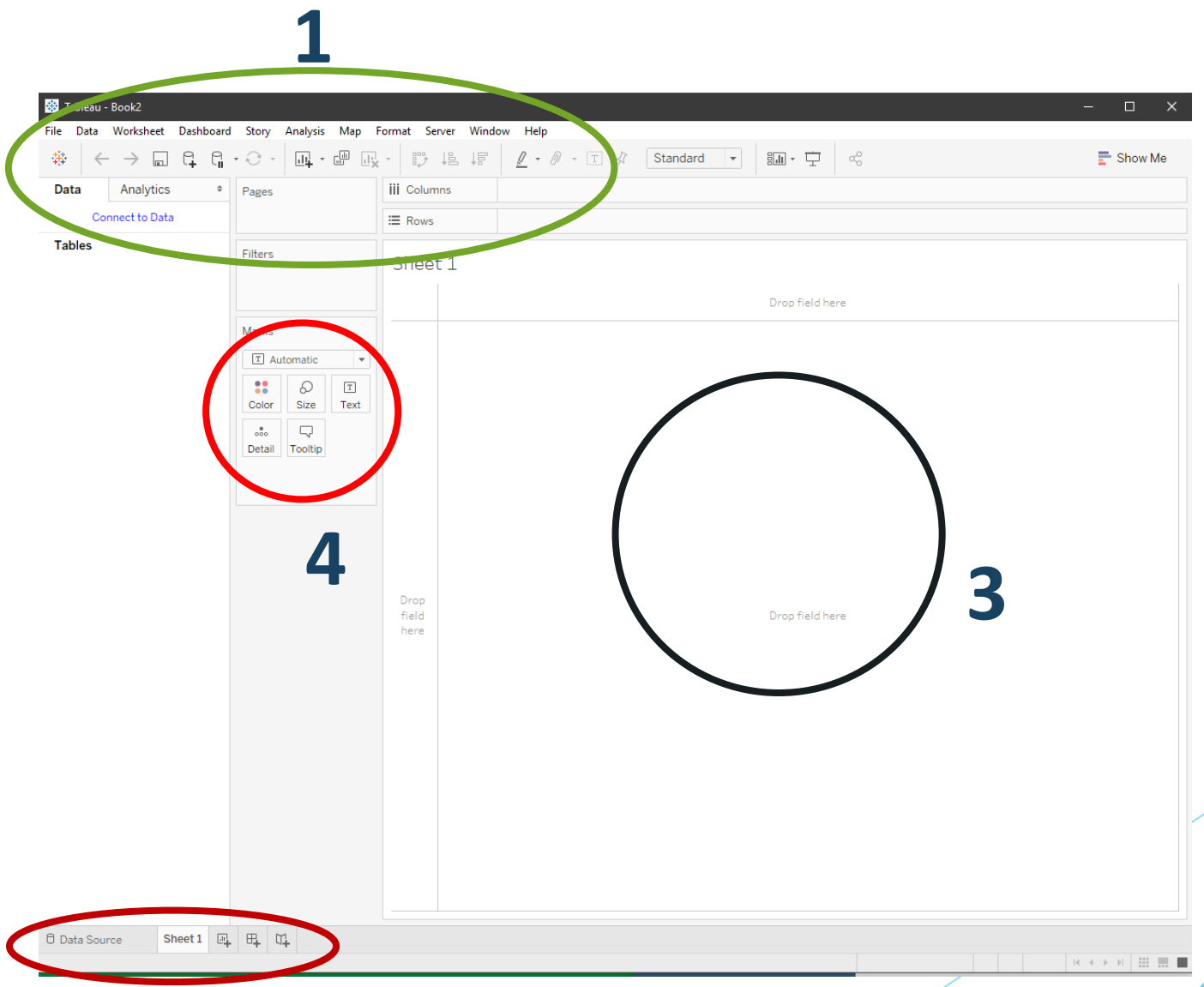
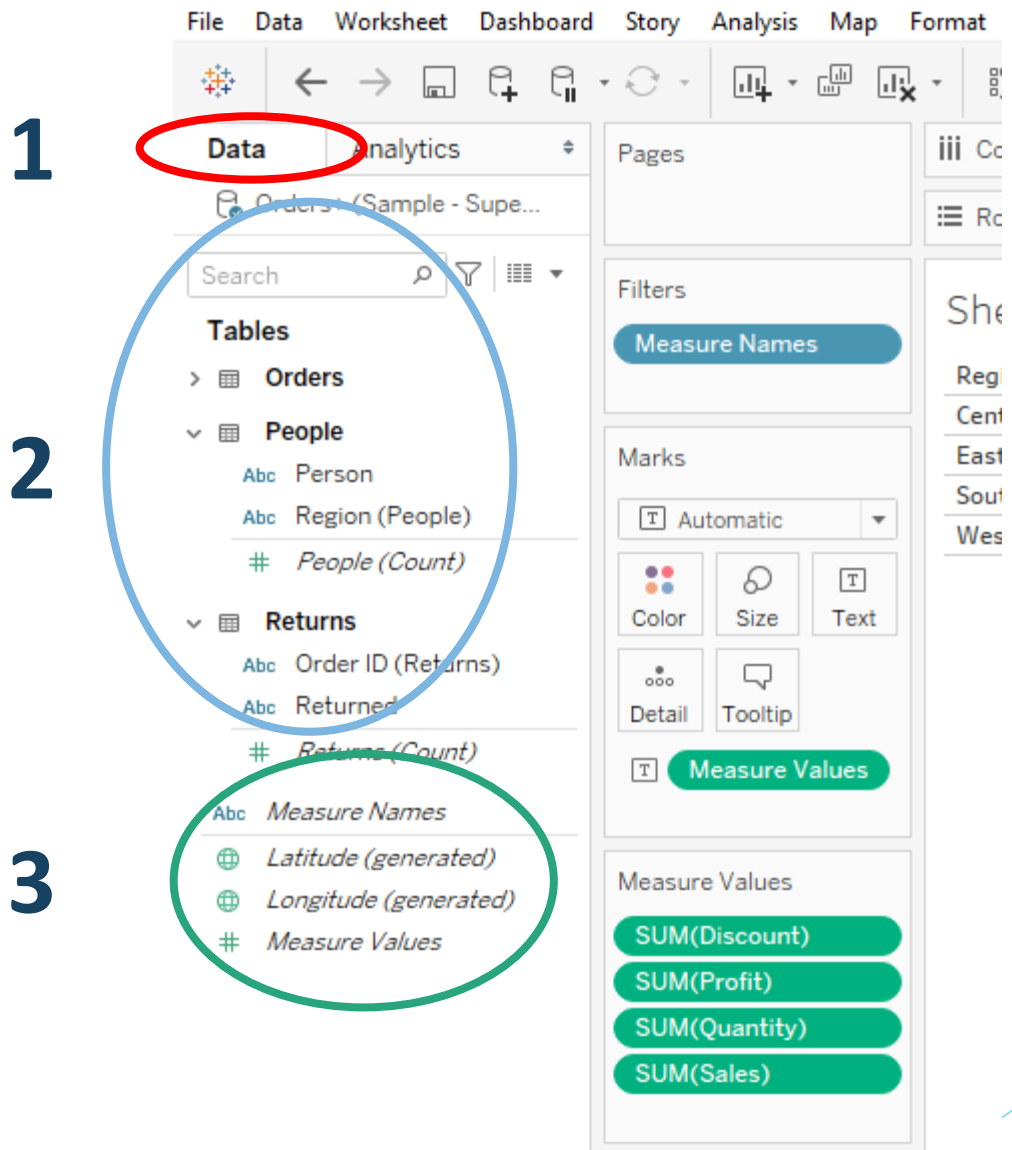


TABLEAU – Dimensions and Measures



Data Types

Data type icons in Tableau

Icon	Data type
Abc	Text (string) values
📅	Date values
📅	Date & Time values
#	Numerical values
T|F	Boolean values (relational only)
🌐	Geographic values (used with maps)
	Cluster Group (used with Find Clusters in Data)

You can change the data type for a field either on the **Data Source** page or in the **Data** pane.

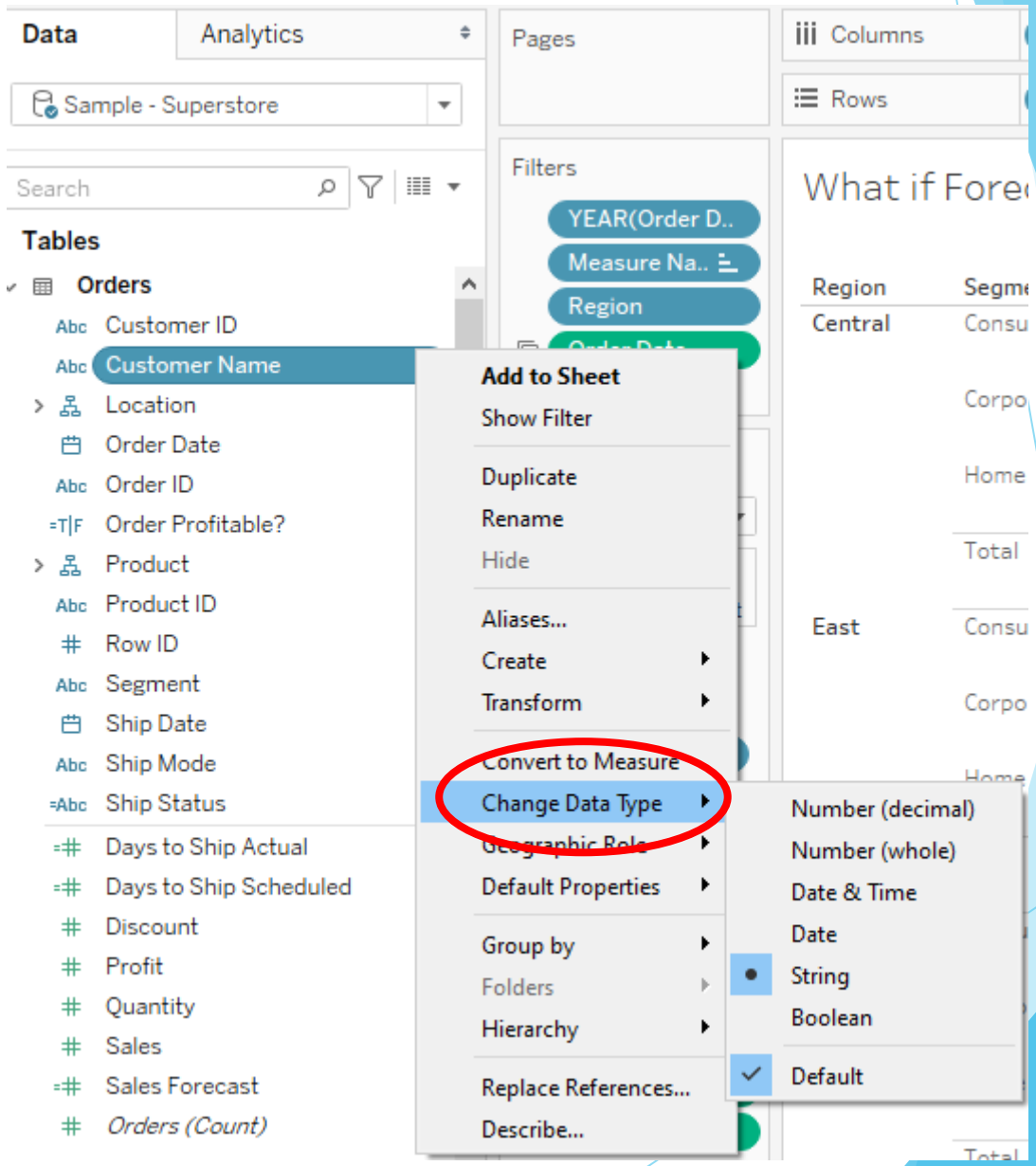


TABLEAU – Filters, Formats

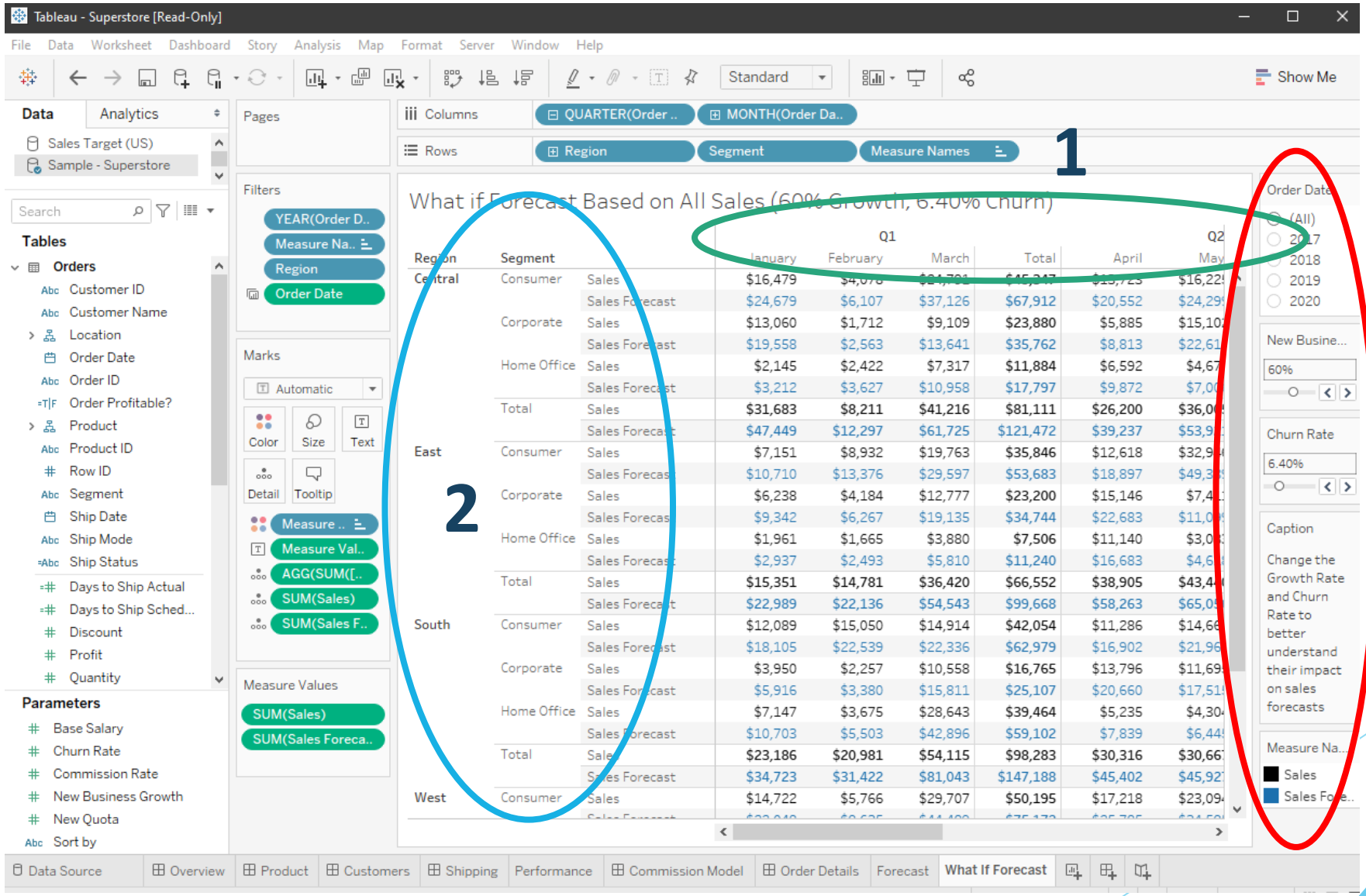


TABLEAU – Filters, Formats

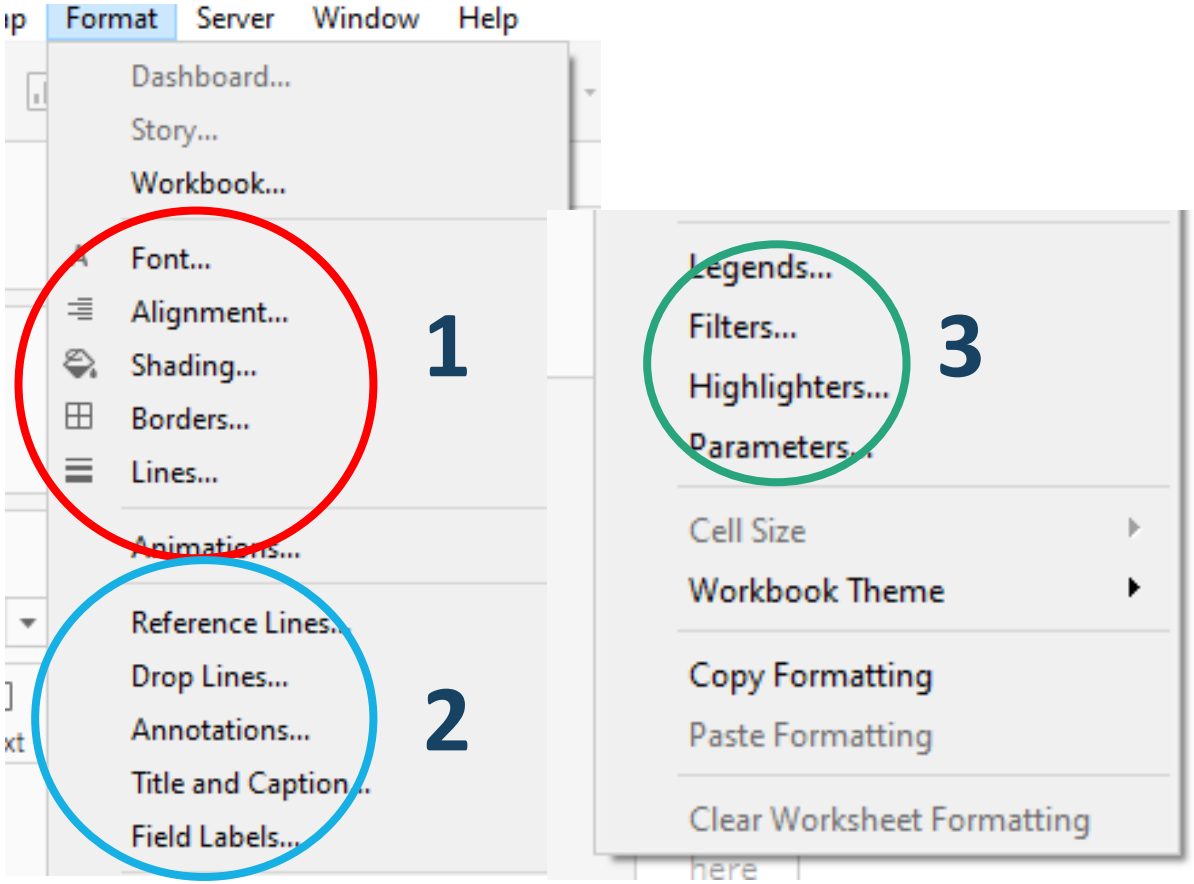


TABLEAU – Filters, Formats

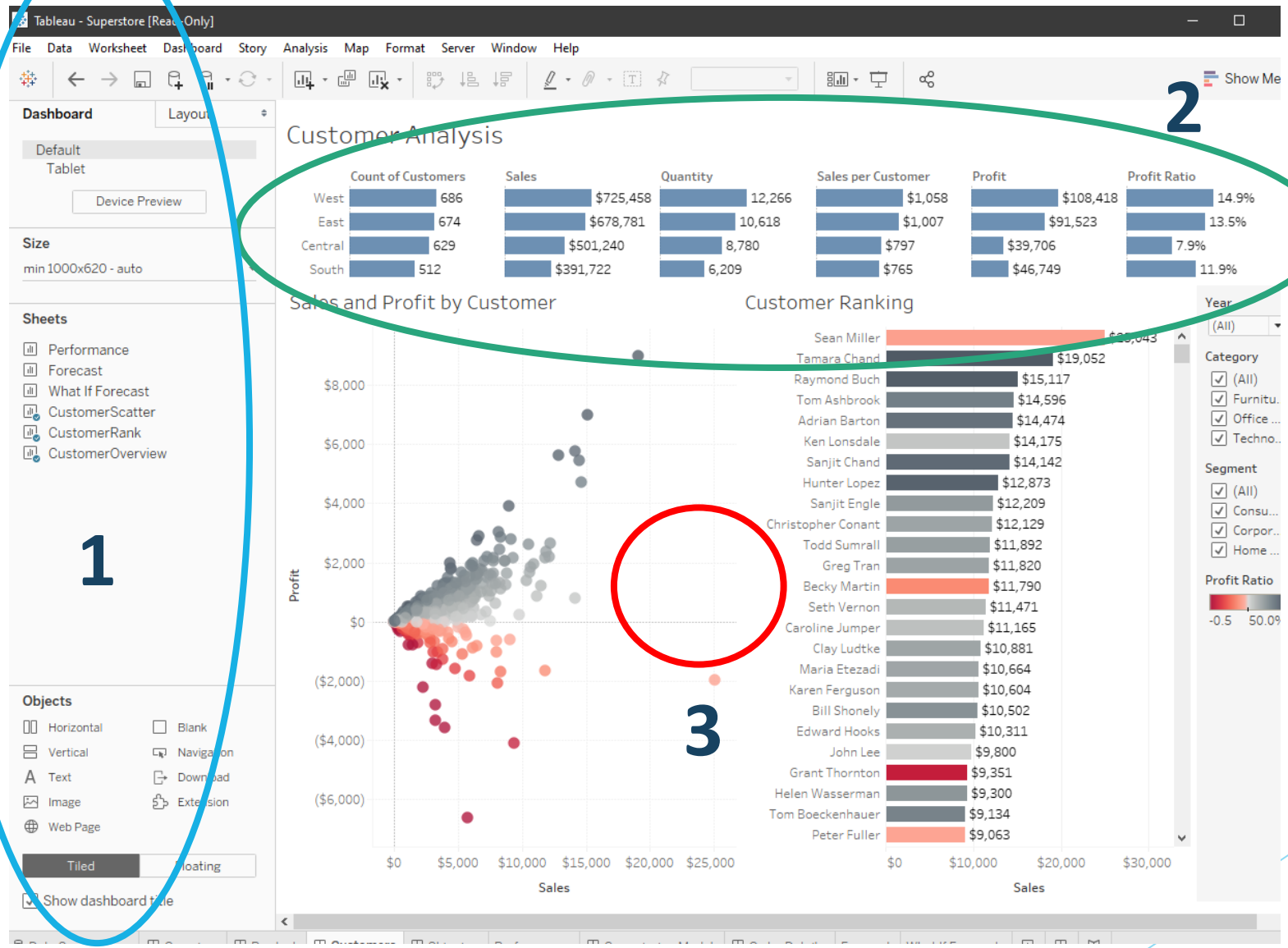


TABLEAU – Filters, Formats

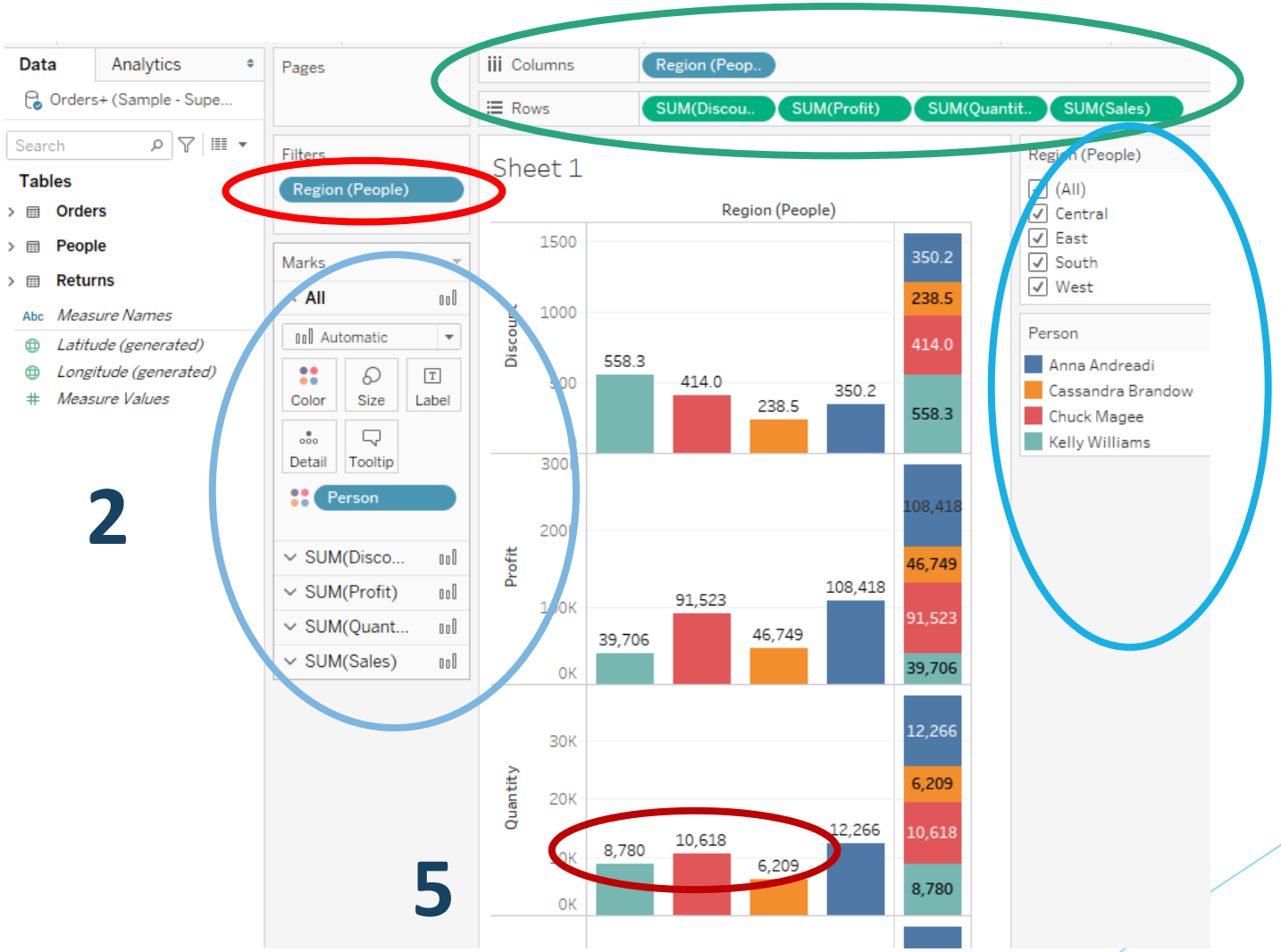


TABLEAU – Text Table

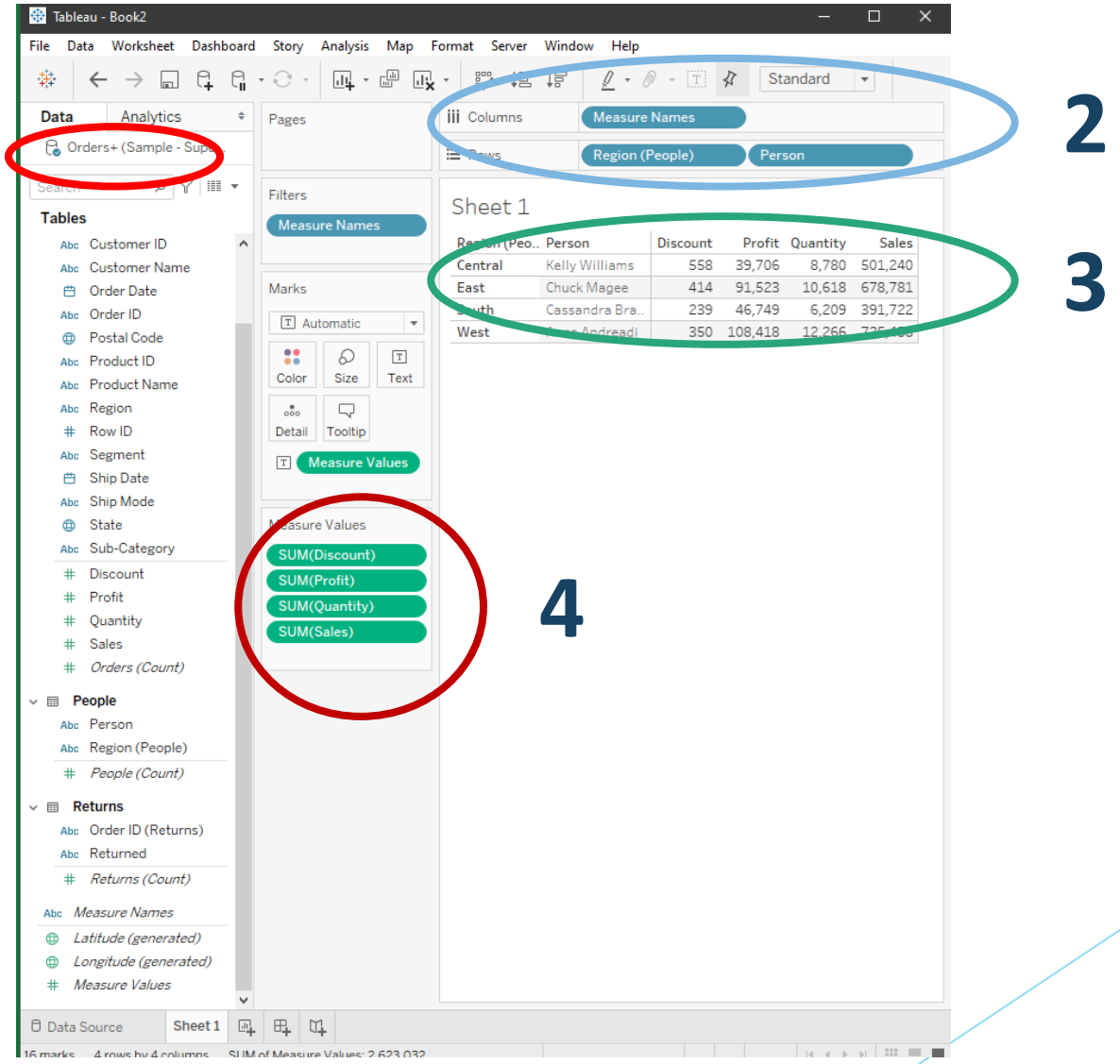


TABLEAU – Data Visualization Best Practices

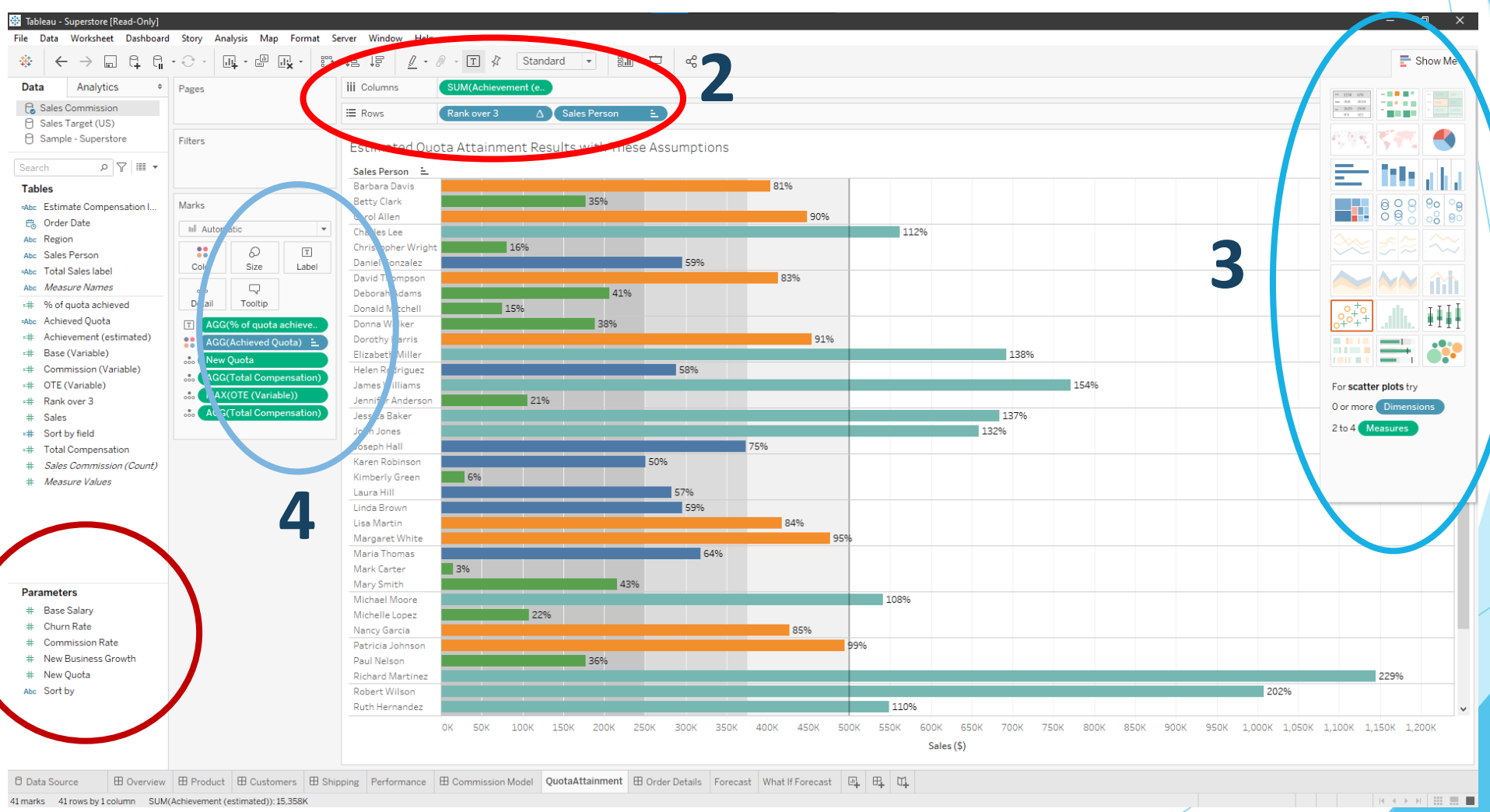


TABLEAU – Data Visualization Best Practices

	Dimensions	Measures	Date	Geo
Text Table	1+	1+		
Stacked Bars	1+	1+		
Circle Views	1+	1+		
Side-by-Side Bars	1+	1+ (3+ fields)		
Side-by-Side Circles	1+	1+ (3+ fields)		
Highlight Tables	1+	1		
Heat Maps	1+	1 or 2		
Pie Charts	1+	1 or 2		
Tree Maps	1+	1 or 2		
Horizontal Bars	0+	1+		
Maps	0+	0 to 1		1
Symbol Maps	0+	0 to 2		1

TABLEAU – Data Visualization Best Practices

	Dimensions	Measures	Date	Geo
Lines, continuous	0+	1+	1	
Lines, discrete	0+	1+	1	
Area Charts, continuous	0+	1+	1	
Area Charts, discrete	0+	1+	1	
Dual Lines	0+	2	1	
Dual Combination Charts	0+	2	1	
Gantt View	1+	0 to 2	1	
Histogram		1		
Box-and-Whisker Plot	0+	1+		
Bullet Graphs	0+	2		
Scatter Plots	0+	2 to 4		
Packed Bubbles View	1+	0 to 2		

DATA VISUALIZATION TECHNIQUES

Data Blending

Data Combination (relationships, joins, blends)

- Data blending is a method for combining data from multiple sources.
- Data blending brings in additional information from a secondary data source and displays it with data from the primary data source directly in the view.
- There are several ways to combine data, each with their own strengths and weaknesses.

https://help.tableau.com/current/pro/desktop/en-us/multiple_connections.htm

Data Combination (relationships, joins, blends) – cont'd

- **Relationships** are the default method and can be used in most instances, including across tables with different levels of detail
    - Flexible and adaptable to the structure of the analysis on a sheet-by-sheet basis
    - Cannot be formed between tables from data sources published to Tableau Server or Tableau Online
    - Cannot be formed based on calculated fields

https://help.tableau.com/current/pro/desktop/en-us/multiple_connections.htm

Data Combination (relationships, joins, blends)– cont'd

- **Joins** combine tables by adding more columns of data across similar row structures
    - Can cause data loss or duplication if tables are at different levels of detail, and joined data sources must be fixed before analysis can begin

https://help.tableau.com/current/pro/desktop/en-us/multiple_connections.htm

Data Combination (relationships, joins, blends)– cont'd

- **Blends** never truly combine the data. Instead, **blends** query each data source independently, the results are aggregated to the appropriate level, then the results are presented visually together in the view.
    - Blends can handle different levels of detail and working with published data sources.
    - Blends are established individually on every sheet and can never be published, there are simply blended results from data multiple data sources in a visualization

https://help.tableau.com/current/pro/desktop/en-us/multiple_connections.htm

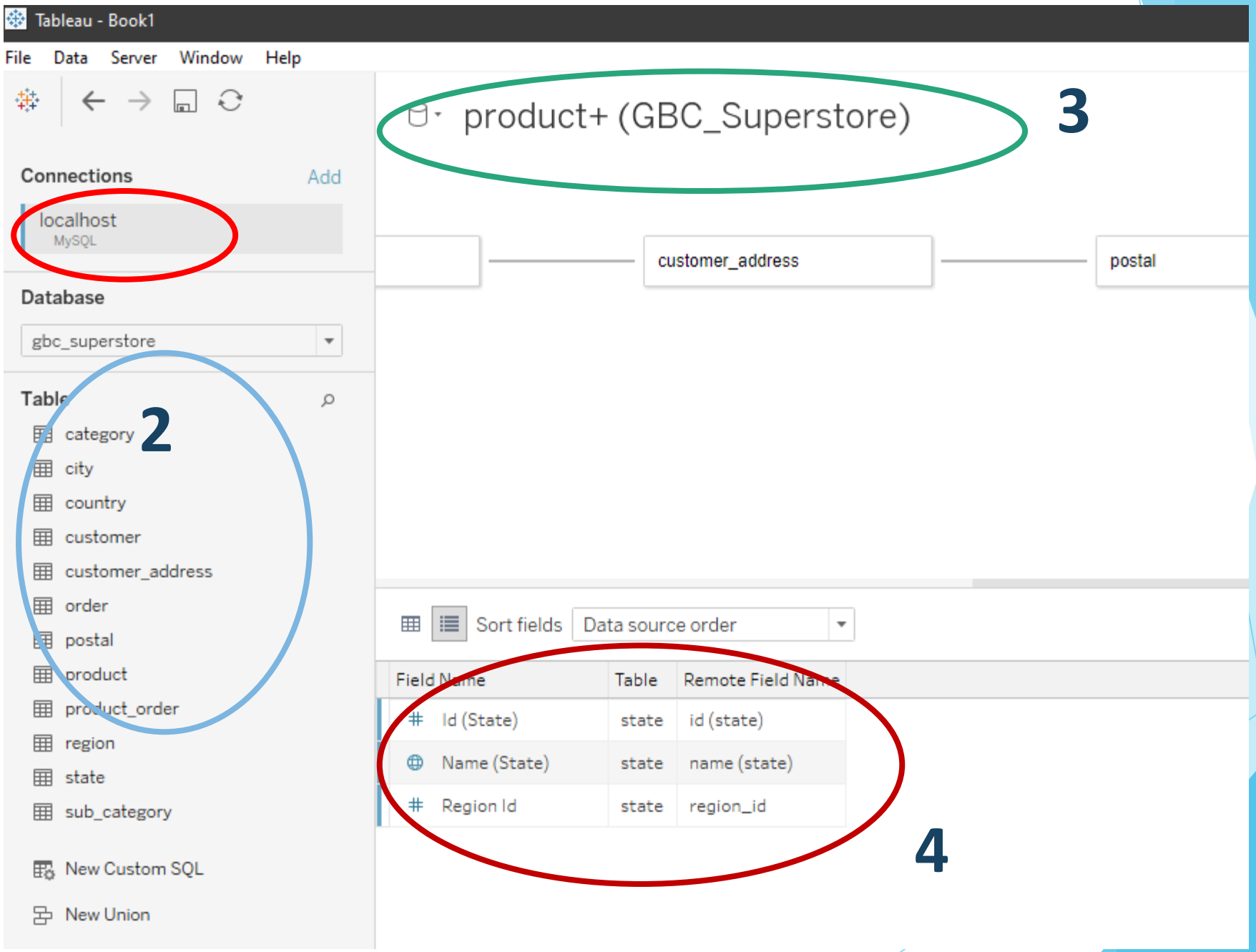
Data Combination (relationships, joins, blends) – cont'd

- Blends handle data sources at different levels of details and can be combined with relationships.
- Relationships have fewer technical limitations than data blending and are the **recommended way of combining data when possible**.

https://help.tableau.com/current/pro/desktop/en-us/multiple_connections.htm

Data Blending –

cont'd



Data Blending –

cont'd

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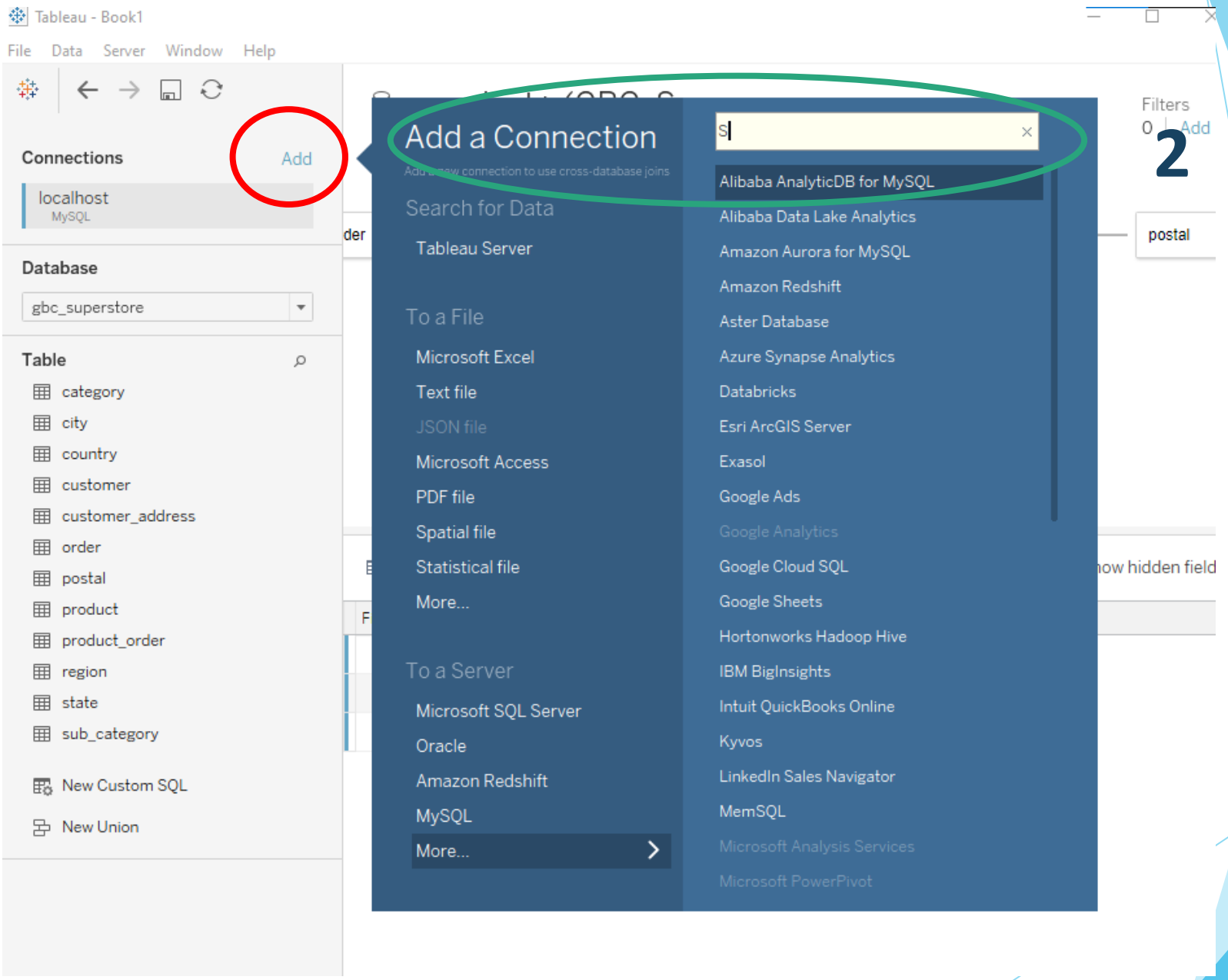

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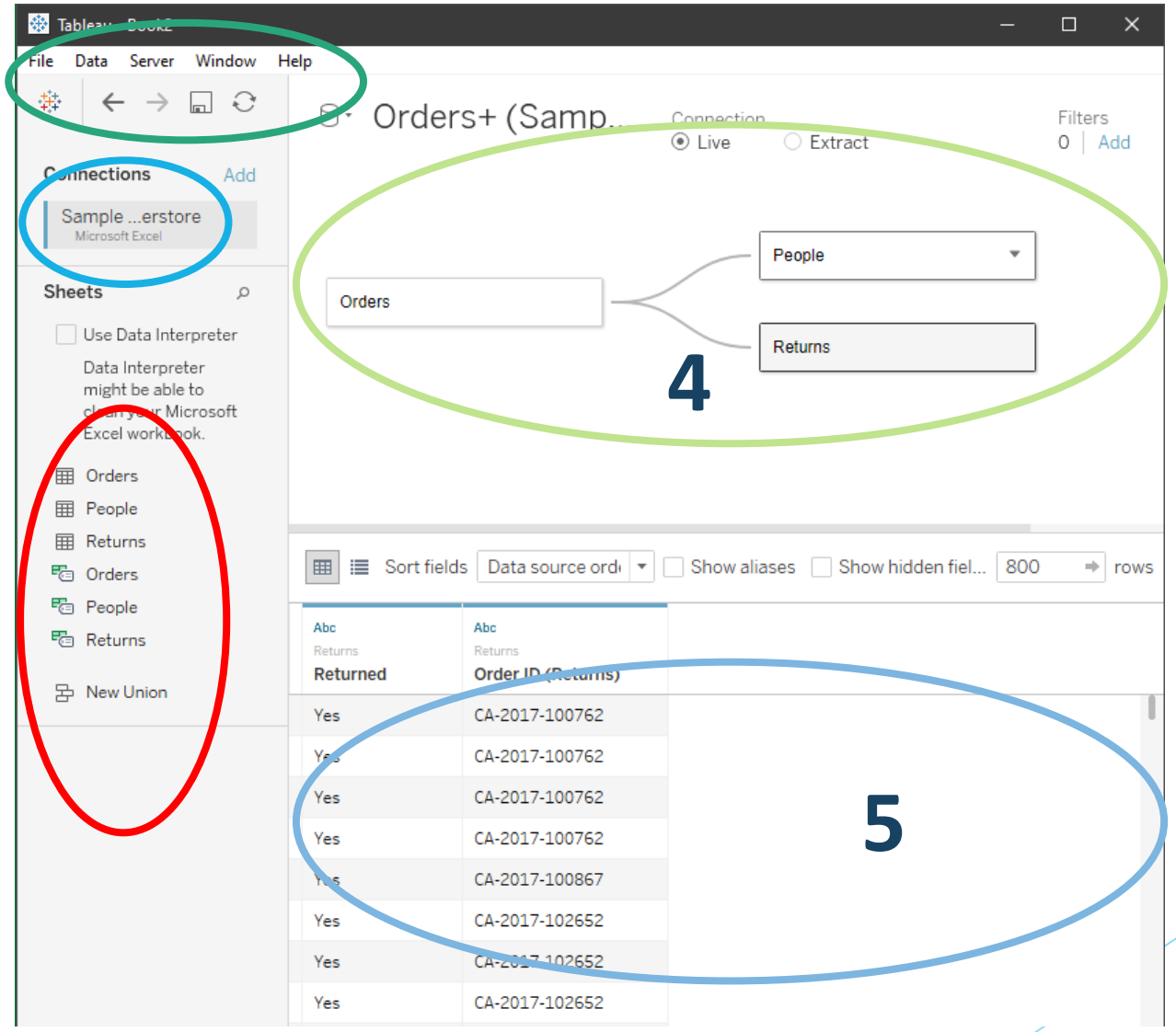
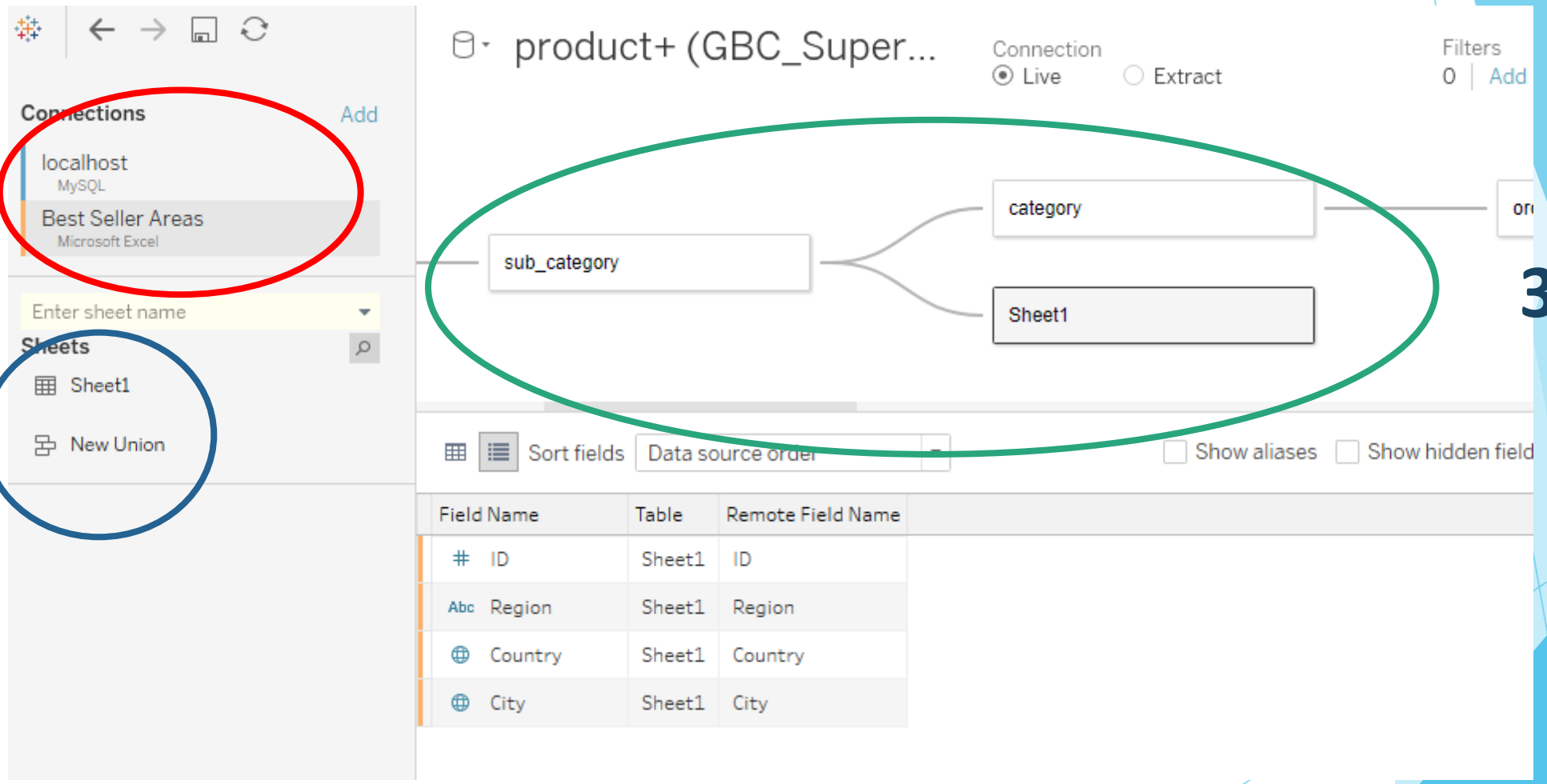
Tables and Joins – cont'd



Tables and Joins – cont'd



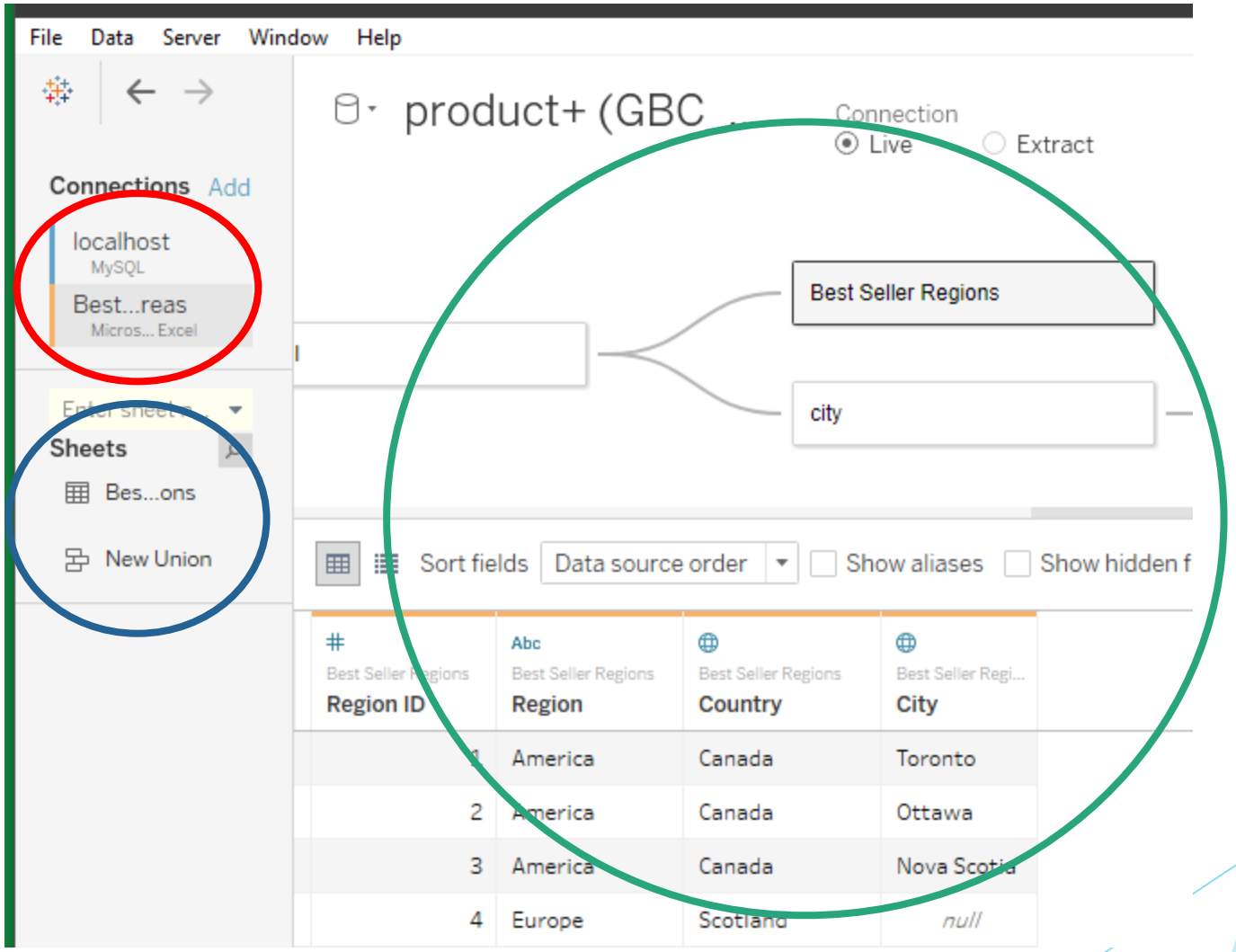
Tables and Joins

– cont'd

1

2

3



DATA VISUALIZATION TECHNIQUES

Business Intelligence tools

Tableau / MySQL Integration

TABLEAU – Data Source Selection

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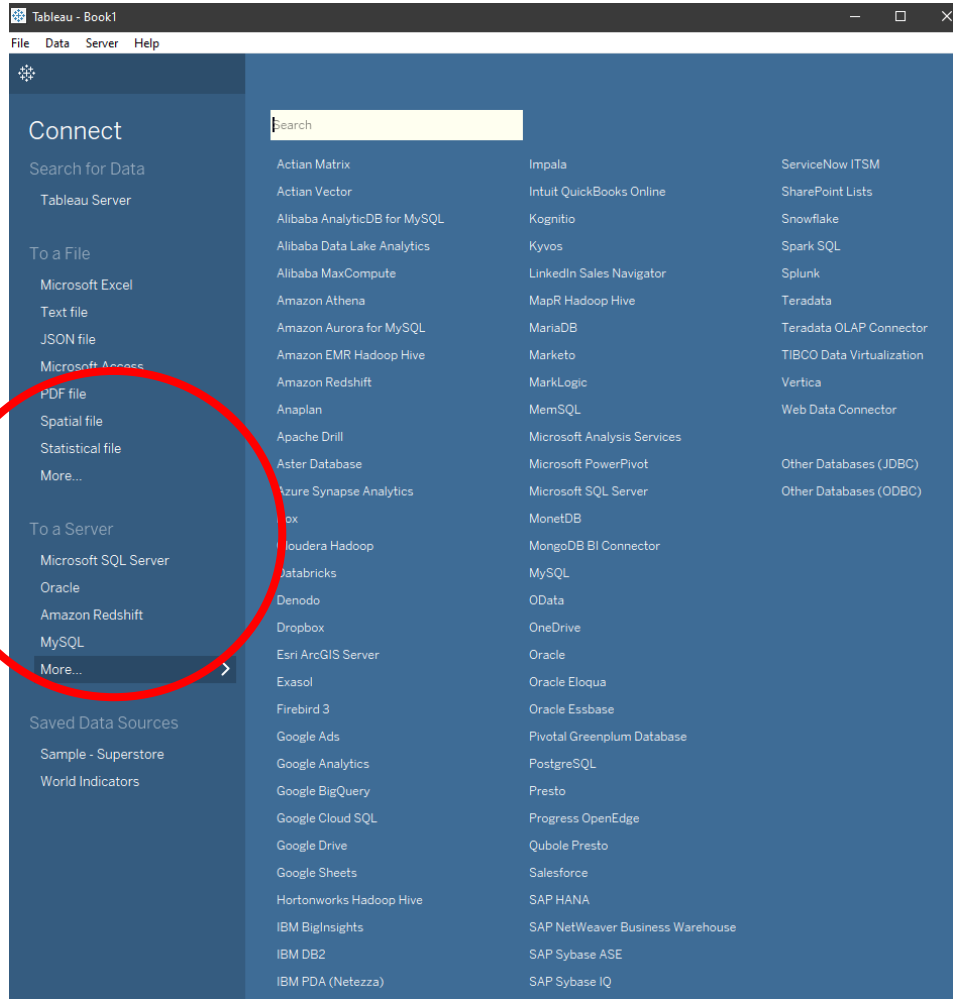

TABLEAU – MySQL Connection

1